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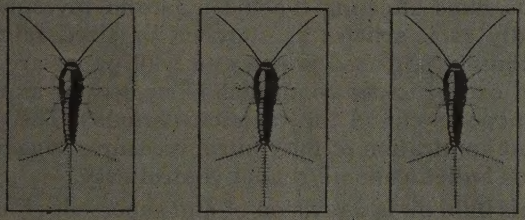
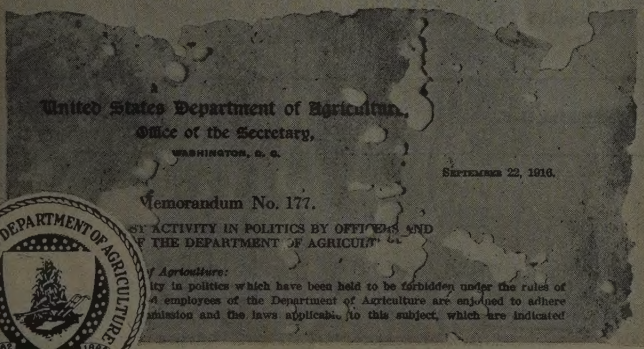
U. S. DEPARTMENT OF AGRICULTURE
FARMERS' BULLETIN No. 1665

THE SILVERFISH

AS A PEST OF THE HOUSEHOLD




United States Department of Agriculture,
Office of the Secretary,
WASHINGTON, D. C.

SEPTEMBER 22, 1916.

Memorandum No. 177.

...TY ACTIVITY IN POLITICS BY OFFICERS AND
...F THE DEPARTMENT OF AGRICULTURE.

...f Agriculture:

...ity in politics which have been held to be forbidden under the rules of ... employees of the Department of Agriculture are enjoined to adhere ...mission and the laws applicable to this subject, which are indicated

1931

THE SILVERFISH OR SLICKER is a common cosmopolitan insect. Its importance as a household pest has increased many fold during the past few years, presumably because of the more general use of heat. In hotel and apartment house basements it seems to find modern conditions most favorable for its increase to tremendous numbers. Under such conditions its spread to the upper floors has been known to interfere seriously with the leasing of rooms, thus affecting the income from investment. Usually such articles as starched or sized fabrics, bookbindings, glazed paper, and wall paper are not eaten except under conditions of neglect or storage or in rooms closed for vacation periods. The persistent application of the control measures suggested in this bulletin should render control easy.

This bulletin is a revision of and supersedes Farmers' Bulletin No. 902, The Silverfish, or "Slicker," an Injurious Household Pest.

Washington, D. C. June, 1931

Cat. fr. sep.

THE SILVERFISH AS A PEST OF THE HOUSEHOLD

J.M.R

By E. A. Back, *Principal Entomologist, in Charge, Division of Stored-Product Insects, Bureau of Entomology*

THE SILVERFISH (*Lepisma saccharina* L.) is that glistening, silver or pearl-gray insect with three long tail-like appendages (fig. 1) that is often seen when books, papers, clothing, or similar articles are suddenly moved. From the dark recesses thus exposed to light the silverfish glides quickly out of sight, often thwarting all attempts to catch it. In fact, this insect is an adept at dodging, and when actually in contact with with the fingers, the slick, shiny body easily slips from the grasp. Because of its glistening body, its quick, gliding movements, and its ability to appear and as quickly and mysteriously disappear, it has received a number of popular names, among which are silverfish, slicker, silver louse, silver witch, sugarfish, woodfish, paper moth, and bristle-tail. It is well-nigh cosmopolitan in its distribution.

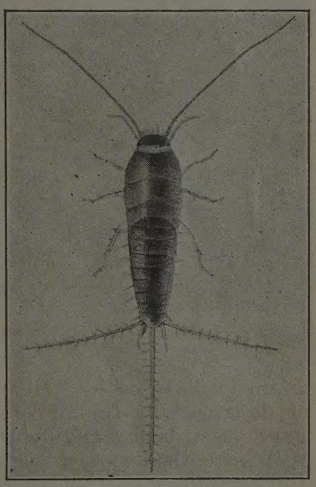


FIGURE 1.—Adult silverfish, about two and one-fourth times natural size. (Marlatt)

There are a number of different kinds of silverfish, perhaps the most common, aside from the subject of this bulletin, being the fire brat (*Thermobia domestica* (Pack.)). This is a heat-loving species that is to be found in greatest numbers about fireplaces and bake ovens and may be distinguished from the common silverfish by the dusky markings on its back.

HABITS OF THE SILVERFISH

Because the silverfish usually shuns the light and can run very rapidly to places of concealment, it is not often seen and may become very abundant and cause considerable injury before its presence is noticed.

The importance of the insect as a household pest has increased many fold during the last few years. This appears to be due to the more extended practice of having private homes evenly heated

and to the unusually favorable environment for silverfish created by the basement conditions often existing in large apartment houses and hotels. Silverfish may be unusually troublesome in newly built establishments before the masonry has completely dried out. The walls of furnace rooms and near-by warm storage spaces may seem to be swarming with these insects which migrate along the plumbing to the floors above. In large apartment houses and hotels silverfish may become so abundant in rooms on the lower floors as to make it difficult to keep them rented.

In private homes silverfish are more apt to be troublesome in libraries and storage rooms, and particularly in attics. Though they prefer hot, damp locations, they become abundant and cause injury in country houses in cool, damp rooms that are never heated. Being nocturnal in habits they may never be observed by the housewife unless they become trapped in bathtubs, washbowls, or dishes into which they have fallen, but up the slick sides of which they can not climb.

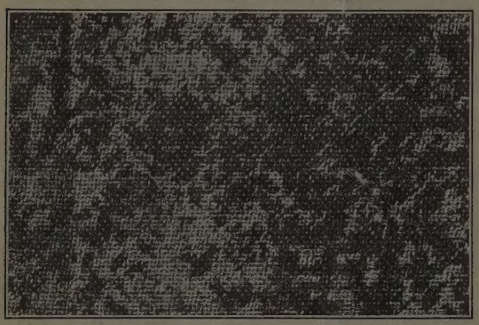


FIGURE 2.—Feeding of silverfish on sizing in the cloth binding of a book

NATURE OF INJURY

The silverfish is one of the most serious pests of libraries, being particularly destructive to the binding of books. It frequently eats off the gold lettering to get at the paste beneath, or gnaws off the label slips glued on the backs of books. Heavily glazed paper is sometimes disfigured or destroyed by the feeding of this pest upon their surfaces. In some cases books and magazines printed on heavily sized paper will have the exposed surface of the leaves a good deal scraped and even those portions covered by the ink may be attacked. Sometimes the paper is entirely consumed. (Figs. 2, 3, and 4.)

The silverfish will also eat any starched clothing, linens, or lace or muslin curtains, and has been known to do very serious damage to silks and rayons which have been stiffened with sizing. By eating the paste from the back of wall paper the silverfish sometimes causes the paper to scale off and become riddled with holes. The pest has been reported as feeding upon carpets, plush coverings of furniture, window shades, and even upon certain vegetable drugs. When abundant in dining rooms it would seem that it is interested in crumbs that lodge in the rugs rather than in eating the rugs themselves.

It is seldom that the silverfish causes damage except where the material it would eat has been left undisturbed for long periods packed away in drawers, closets, bookcases, or other such places. It

likes warmth and does little damage during winter in the North, although in the South it is active the year around.

SILVERFISH AND COAL SUPPLIES

The persistent belief in certain places that silverfish are brought in large numbers to apartment houses and smaller dwellings with the coal supply seems without foundation. By the end of summer the insect often has increased to large numbers in basements, where they find food in and about trash containers, incinerators, janitors' rooms,

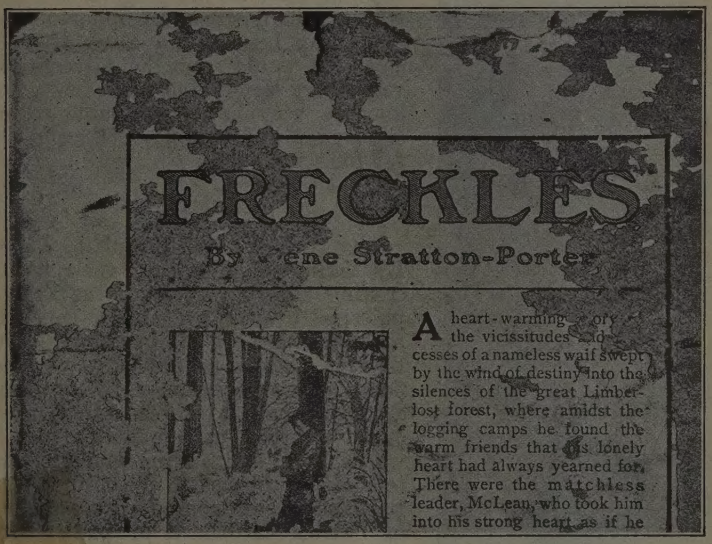

FRECKLES
By Gene Stratton-Porter
A heart-warming story of the vicissitudes and successes of a nameless waif swept by the wind of destiny into the silences of the great Limberlost forest, where amidst the logging camps he found the warm friends that his lonely heart had always yearned for. There were the matchless leader, McLean, who took him into his strong heart as if he

FIGURE 3.—Feeding of silverfish on sizing in paper cover of a book

etc. When the fires are started in the fall, the heat causes the insects to become very active. They seek shelter in supplies of coal, thus giving the impression that they have come with the coal and are feeding upon it. They are often quite as abundant in basements of buildings heated by gas or oil burners.

LIFE HISTORY

A thorough study has not been made of the biology of the silverfish. From available data, however, it would seem that in a temperate climate females lay from 6 to 10 eggs each in the late spring. In one instance under observation all egg laying was confined to the month of May. The small whitish eggs are laid in crevices and other out-of-the-way places or in the folds of stored-away clothing. Though they may adhere slightly to one another and to the material upon which they are laid they are easily dislodged by brushing. When temperatures range between 64° and 68° F. the eggs may not hatch for from 46 to 60 days after being laid, but in tropical climates they may hatch in from 6 to 10 days.

When first hatched the young silverfish closely resemble the parent insect and continue to do so throughout immature life. In tropical climates they may become mature in from seven to nine months, but in temperate climates they require about two years to reach maturity. Larvae hatching in July, from eggs laid in May, have been known to pass two winters in the immature state. The females among these specimens matured and began laying eggs in May of the second year, and died not later than August of that year.

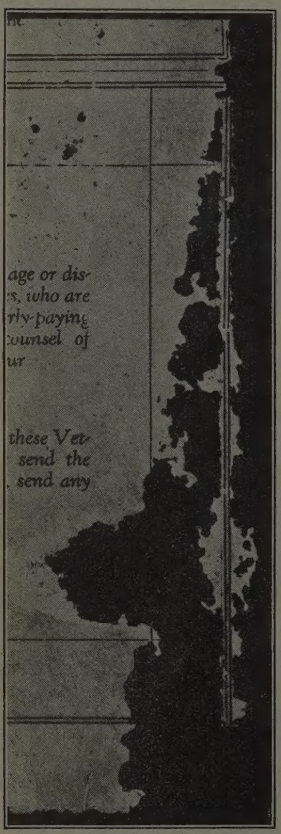


FIGURE 4.—Destruction of a printed page by silverfish

Adult specimens have been kept alive without food for as long as 319 days, whereas many given an opportunity to feed have been found alive after 327 days. It would seem that silverfish develop very slowly and have few young, but are very hardy and able to subsist under unfavorable food conditions for long periods.

REMEDIES

Silverfish are not difficult to control. By taking advantage of their natural craving for starchy food, they can be poisoned by using a powder consisting of a mixture of 12 parts of sodium fluoride powder to 100 parts of wheat flour, or a thin paste made by mixing from one-half to three-fourths of an ounce of white arsenic with 1 pint of wheat flour and adding enough water to make a thin paste by boiling. The paste should be poured on small pieces of flexible cardboard or paper which later can be rolled into cylinders with the paste on the inside. The powder or paste should be put in out-of-the-way places where silverfish are found—on shelves, behind books, back of mantels, under washboards, and on the bottoms of drawers and in storage boxes. As both are poisonous they should be put where young children will not find them.

Pyrethrum, ~~or buhach~~ powder, dusted upon bookshelves or other places where it can be used, is of value; but it must be renewed often, for it loses its strength after long exposure to air.

For quickly killing hordes of silverfish found overrunning basements and furnace and storage rooms, spray with a saturated solution of paradichlorobenzene in carbon tetrachloride. As the carbon tetrachloride evaporates fine crystals of paradichlorobenzene will

form on the sprayed objects, but these in turn will soon evaporate, causing no damage. If the room sprayed with the carbon tetrachloride-paradichlorobenzene mixture can be closed for 24 hours the results will be better. For starched clothing and similar objects liable to injury, frequent handling and airing and the destruction of any insects found are to be recommended, in addition to the remedies noted above.

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